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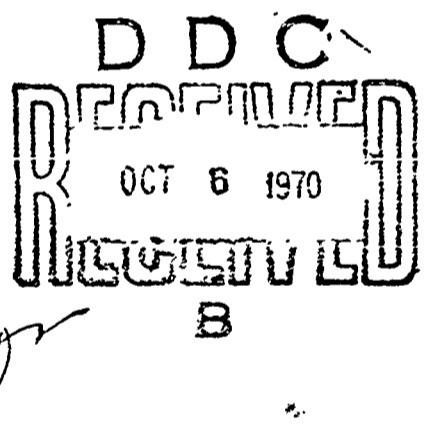
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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV 96
(28 August 1970)

BY

LEN E. CARTER



ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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UNITED STATES ARMY ELECTRONICS COMMAND

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(28 August 1970)

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DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac STV 96 are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Nike-Hydac STV 96 was launched from Launch Complex 33, L-361, White Sands Missile Range (WSMR), New Mexico, at 2200 hours MDT, 28 August 1970.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Technical Area, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. Ballistics Meteorologists for this firing were George M. Fugate and Len E. Carter.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of 5 aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,000 feet above the surface, wind data were obtained from double-theodolite-observed balloon ascents.

Temperature, pressure, and humidity data, along with upper wind data from 4,000 to 100,000 feet above the surface, were obtained from standard rawinsonde obervations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and wind-weighting values as a function of altitude were provided by the Atmospheric Sciences Laboratory (ASL) and are the basis for the data appearing in Table I.

REFERENCES

1. Jacobs, W. N., May 1968: "Automatic pilot tracking system." Rep. No. ECOM-5196, U. S. Army Electronics Command, Atmospheric Sciences Laboratory, White Sands Missile Range, N. Mex. (AD 674 180)
2. Kubinski, S. F., April 1967: "A comparative evaluation of the automatic tracking pilot-balloon wind measuring system." Rep. No. ECOM-5121, U. S. Army Electronics Command, Atmospheric Sciences Laboratory, White Sands Missile Range, N. Mex. (AD 654 991)
- 3 Walter, E. L., June 1962: "Six-variable ballistic model for a rocket." Rep. No. MM-445, U. S. Army Signal Missile Support Agency, Missile Meteorology Division, White Sands Missile Range, N. Mex.
4. Seagraves, M. A., B. Butler, September 1968: "Performance characteristics and wind effects for the Aerobee 150 with VAM booster." Rep. No. ECOM-5209, U. S. Army Electronics Command, Atmospheric Sciences Research Office, White Sands Missile Range, N. Mex. (AD 680 175)

PAYOUT	285	Pounds
CORIOLIS DISPLACEMENT	WEST	3.1 Miles
SECOND-STAGE IGNITION	TIME	13 Seconds
	ALTITUDE	25,800 Feet MSL
PEAK	TIME	206 Seconds
	ALTITUDE	579,051 Feet MSL
	RANGE	1.78 Miles/MPH
UNIT WIND EFFECT	CROSS	1.84 Miles/MPH
TOWER TILT EFFECT		10.34 Miles/Degree

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC STV 96

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
9- 68	.162
68- 108	.079
108- 148	.051
148- 184	.048
184- 216	.035
216- 300	.074
300- 400	.065
400- 600	.084
600- 800	.055
800-1000	.040

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.060
1400- 2000	.054
2000- 2500	.031
2500- 3000	.015
3000- 3500	.013
3500- 4270	.003
4270- 6000	-.005
6000- 11000	-.013
11000- 16000	-.012
16000- 22200	-.016

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
22200-24000	.041
24000-26000	.031
26000-31000	.047
31000-36000	.026

TABLE II. BALLISTIC FACTORS
NIKE-HYDAC STV 96

TABLE I TOWER WIND DATA NIKE-HYDAC STV 96

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS MILES PER HOUR					
	7		8		9	
	N-S	E-W	N-S	E-W	N-S	E-W
160-200	2.0S	2.0N	0.0	1.0N	4.0S	1.0E
200-250	3.0	0.0	4.0S	0.0	4.0	0.0
250-350	2.0	0.0	5.0	0.0	4.0	0.0
350-450	6.0	3.0N	4.0	2.0N	2.0	2.0N
450-550	7.0	2.0	2.0	2.0	2.0	2.0

TABLE III. TOWER WIND DATA (CONT)
NIKE-HYDAC STV 96

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR											
	1 2000 MDT	2 2030 MDT	3 2100 MDT	4 2110 MDT	5 2120 MDT	6 2130 MDT	N-S.	E-W	N-S.	E-W	N-S.	E-W
216- 300	7.0 S	3.5 E	7.0 S	3.5 E	5.5 S	1.5 W	7.5 S	0.5 E	7.5 S	0.0	6.0 S	1.0 N
300- 400	6.0	7.5	7.0	4.0	6.5	0.5	1.0	0.5 W	6.0	1.5 W	5.5	2.0
400- 600	8.5	3.5	11.0	4.0	9.0	0.5	9.0	3.5	7.0	3.0	8.0	3.0
600- 800	10.0	3.0	12.0	4.0	11.5	2.5	11.0	3.5	10.0	2.0	9.5	3.0
800-1000	9.5	5.0	10.5	5.0	10.5	4.0	10.5	2.5	10.0	1.5	9.5	2.0
1000-1400	11.0	5.5	11.0	6.0	11.5	2.5	11.5	0.5	10.5	0.5	10.0	1.5
1400-2000	10.0	4.0	12.0	7.5	11.0	1.0	11.0	2.0 E	11.5	1.0 E	9.0	0.0
2000-2500	10.5	4.0	11.5	6.5	12.0	2.0 E	11.0	3.0	11.5	2.5	10.0	3.5 E
2500-3000	9.5	5.5	11.5	6.0	11.0	3.0	11.0	5.0	11.0	4.5	11.0	5.5
3000-3500	10.0	4.0	12.0	7.0	10.0	3.0	10.0	5.5	10.0	5.0	10.0	6.0
3500-4000	10.0	4.0	11.0	6.0	10.0	3.0	9.5	6.0	9.5	5.0	10.5	6.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA
NIKE-HYDAC STV 96

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS						
	7		8		9		
	2140 MDT	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	6.5S	3.5W	2.5S	2.5W	1.0S	1.0W	
300- 400	4.0	4.5	3.0	4.5	1.5	1.5	
400- 600	6.0	4.0	4.5	4.0	3.5	2.0	
600- 800	8.0	4.0	6.0	2.5	7.5	1.0	
800-1000	9.5	3.0	8.5	3.0	9.0	1.5	
1000-1400	9.0	2.0	8.0	3.0	8.5	2.0	
1400-2000	10.0	1.5	10.0	0.0	9.5	1.5E	
2000-2500	10.0	2.0E	10.0	2.5E	10.5	3.0	
2500-3000	11.0	3.5	10.5	5.0	12.0	5.5	
3000-3500	11.0	4.5	8.5	6.0	12.0	7.0	
3500-4000	11.5	6.0	10.0	6.0	12.0	6.0	

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA (CONT)
NIKE-HYDAC STV 96

TABLE V RAWINSONDE-MEASURED WIND DATA
NIKE-HV AC STV 96

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS		
	1900 NDT	2200 NDT	
N-S	E-W	N-S	E-W
4270- 6000	7.0S	6.0E	7.0S
6000-11000	0.0	12.0	0.0
11000-16000	2.0S	2.5	0.0
16000-22200	1.5	9.0	2.5S
22200-24000	1.0N	7.0	2.5N
24000-26000	4.5	4.0	5.0
26000-31000	11.0	6.5	12.0
31000-36000	15.5	9.0	13.5
36000-41000	19.5	7.0	17.5
41000-46000	14.0	2.5	16.0
46000-53200	2.0	12.0	5.0S
			3.5

STATION ALTITUDE
28 AUG. 7C 1900 HRS MDT
ASCENSILN NL.

SIGNIFICANT LEVEL DATA
24000020769
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VI

POINT SIGNIFICANT LEVEL	ALTITUDE MILLIARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL.HUM. PERCENT
		DEGREES	CENTIGRADE	
877.1	3989.0	31.8	2.9	16.0
637.0	12994.8	6.1	-12.5	25.0
603.0	14467.7	5.0	-20.4	14.0
509.0	18950.3	-2.1	-26.1	14.0
440.0	22695.6	-10.5	-30.9	17.0
310.0	31215.0	-30.9	-44.6	25.0
277.0	33805.7	-38.0	-46.1	43.0
261.0	35147.1	-40.8	-50.2	36.0
184.0	42708.8	-57.0		
141.0	48115.6	-68.4		
130.0	49712.7	-70.7		
115.0	52092.3	-73.7		
110.0	52956.5	-70.1		
97.0	55422.1	-70.4		
87.0	57585.5	-64.4		
68.0	62578.7	-62.6		
59.0	65504.4	-57.5		
35.0	76442.9	-55.7		
30.0	79717.9	-51.8		
21.0	87377.3	-51.1		
9.5	104781.6	-42.5		
6.8	112346.1	-37.8		

STATION ALTITUDE 3984.0 FT 1.51
28 AUG. 70 1900 HRS MDT
ASCENSION NO. 745

UPPER AIR DATA
2400020769
WHITE SANDS

TABLE VII

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA INDEX OF REFRACTION		
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	REFRACTION
3989.0	877.1	31.8	2.9	16.0	998.9	681.1	180.0	4.1	1.000253
4000.0	876.8	31.8	2.9	16.0	998.6	681.0	179.9	4.1XX	1.000253
4500.0	861.3	30.3	2.2	16.5	985.7	679.4	174.5	4.4XX	1.000249
5000.0	846.2	28.9	1.5	17.0	973.1	677.8	169.0	4.7XX	1.000245
5500.0	821.3	27.5	0.7	17.5	960.6	676.1	163.6	5.0XX	1.000241
6000.0	816.6	26.1	-0.1	18.0	948.3	674.5	158.2	5.3XX	1.000237
6500.0	802.3	24.6	-0.9	18.5	936.1	672.8	152.7	5.6XX	1.000233
7000.0	788.1	23.2	-1.7	19.0	924.2	671.2	147.3	5.9XX	1.000229
7500.0	774.3	21.8	-2.5	19.5	912.4	669.5	141.9	6.2XX	1.000225
8000.0	760.6	20.4	-3.3	20.0	900.8	667.9	136.5	6.5XX	1.000222
8500.0	747.3	18.9	-4.2	20.5	889.4	666.2	131.0	6.8XX	1.000218
9000.0	734.1	17.5	-5.1	21.0	878.1	664.5	125.6	7.1XX	1.000214
9500.0	721.2	16.1	-6.0	21.5	867.0	662.9	120.2	7.4XX	1.000211
10000.0	708.5	14.6	-6.8	22.0	856.0	661.2	114.7	7.7XX	1.000207
10500.0	696.0	13.2	-7.8	22.5	845.3	659.5	109.3	8.0XX	1.000204
11000.0	683.8	11.8	-8.7	23.0	834.6	657.9	103.9	8.3XX	1.000201
11500.0	671.7	10.4	-9.6	23.5	824.1	656.2	98.5	8.6XX	1.000198
12000.0	659.5	8.9	-10.6	24.0	813.8	654.5	93.0	8.9XX	1.000194
12500.0	648.3	7.5	-11.5	24.5	803.6	652.8	87.6	9.2XX	1.000191
13000.0	636.9	6.1	-12.5	25.0	793.5	651.1	82.2	9.5XX	1.000188
13500.0	625.1	5.7	-14.8	21.2	780.1	650.6	76.8	9.8XX	1.000183
14000.0	613.6	5.3	-17.5	17.5	766.9	650.1	71.3	10.2XX	1.000178
14500.0	602.3	4.9	-20.4	14.0	754.0	649.6	65.9	10.5XX	1.000174
15000.0	591.0	4.2	-21.0	14.0	742.0	648.7	61.9	9.2	1.000171
15500.0	579.5	3.4	-21.7	14.0	730.2	647.7	74.0	7.6	1.000168
16000.0	569.1	2.6	-22.3	14.0	718.6	646.8	81.7	6.2	1.000165
16500.0	558.4	1.8	-23.0	14.0	707.2	645.8	94.8	5.1	1.000162
17000.0	547.9	1.0	-23.6	14.0	696.0	644.9	112.4	4.5	1.000160
17500.0	537.1	0.2	-24.2	14.0	684.9	644.0	122.0	4.1	1.000157
18000.0	527.6	-0.6	-24.9	14.0	674.1	643.0	130.3	3.7	1.000154

XX WIND DATA MAY BE INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 3685
28-AUG-70 1900 MRS MDT
ASCENS JUN NU. 115

UPPER AIR DATA
2400020769
WHITE SANDS

TABLE VII (Cont)

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE			WIND DATA SPEED OF SOUND KNOTS	INDEX OF REFRACTION
		AIR DEWPOINT DEGREES	PERCENT METER	REL.HUM. PERCENT		
18500.0	517.7	-1.4	-25.5	14.0	663.4	1.000152
19000.0	508.0	-2.2	-26.2	14.0	652.9	1.000149
19500.0	498.2	-3.3	-26.8	14.4	643.0	1.000147
20000.0	488.6	-4.5	-27.4	14.8	633.3	1.000144
20500.0	479.2	-5.6	-28.0	15.2	623.7	1.000142
21000.0	470.0	-6.7	-28.7	15.6	614.3	1.000140
21500.0	460.9	-7.8	-29.3	16.0	605.0	1.000138
22000.0	452.1	-8.9	-30.0	16.4	595.9	1.000135
22500.0	443.4	-10.1	-30.7	16.8	586.9	1.000133
23000.0	434.5	-11.2	-31.4	17.3	577.8	1.000131
23500.0	425.7	-12.4	-32.1	17.8	568.7	1.000129
24000.0	417.0	-13.6	-32.8	18.2	559.7	1.000127
24500.0	408.5	-14.8	-33.6	18.7	550.8	1.000125
25000.0	400.2	-16.0	-34.3	19.2	542.1	1.000123
25500.0	392.1	-17.2	-35.1	19.6	533.6	1.000121
26000.0	384.1	-18.4	-35.9	20.1	525.2	1.000119
26500.0	376.3	-19.6	-36.7	20.6	517.0	1.000117
27000.0	368.6	-20.8	-37.5	21.0	508.9	1.000115
27500.0	361.1	-22.0	-38.3	21.5	500.9	1.000113
28000.0	353.8	-23.2	-39.1	22.0	493.1	1.000111
28500.0	346.6	-24.4	-40.0	22.5	485.4	1.000109
29000.0	339.6	-25.6	-40.8	22.9	477.8	1.000107
29500.0	332.6	-26.8	-41.6	23.4	470.4	1.000106
30000.0	325.9	-28.0	-42.5	23.9	463.1	1.000104
30500.0	319.2	-29.2	-43.4	24.3	455.9	1.000102
31000.0	312.8	-30.4	-44.2	24.8	448.8	1.000101
31500.0	306.2	-31.7	-44.6	27.0	441.7	1.000099
32000.0	299.6	-33.1	-44.7	30.5	434.7	1.000098
32500.0	293.2	-34.4	-45.0	30.5	427.8	1.000096
33000.0	286.9	-35.8	-45.3	37.4	421.0	1.000094

STATION ALTITUDE 2589.0 C. T P S
22 AUG. 70 1900 HRS MDT
ASCENSION NO. 765

UPPER AIR DATA
2400020769
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VII (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	WIND DATA		INDEX OF REFRACTION
				GM/CUBIC METER	SOUND KNOTS	
33500.0	280.7	-37.2	-45.8	40.9	598.2	14.8
34000.0	274.6	-35.4	-46.7	42.0	596.6	15.0
34500.0	268.6	-39.4	-48.2	39.4	595.3	14.8
35000.0	262.7	-40.5	-49.8	36.8	593.4	14.4
35500.0	256.8	-41.6	-51.3	34.3**	594.0	13.9
36000.0	250.9	-42.6	-52.9	31.9**	592.6	13.5
36500.0	245.2	-43.7	-54.5	29.6**	591.2	14.3
37000.0	239.6	-44.8	-56.2	27.2**	589.8	14.8
37500.0	234.1	-45.8	-57.8	24.8**	588.5	15.6
38000.0	228.7	-46.9	-59.6	22.4**	587.1	16.6
38500.0	223.5	-48.0	-61.4	20.0**	585.7	17.8
39000.0	218.4	-49.1	-63.3	17.7**	584.3	18.8
39500.0	213.4	-50.1	-65.2	15.3**	582.9	19.6
40000.0	208.5	-51.2	-67.4	12.9**	581.5	20.5
40500.0	203.8	-52.3	-69.7	10.5**	580.1	21.7
41000.0	199.1	-53.3	-72.3	8.1**	578.7	22.3
41500.0	194.6	-54.4	-75.4	5.8**	577.3	22.4
42000.0	190.1	-55.5	-79.6	3.4**	575.9	21.9
42500.0	185.6	-56.6	-87.5	1.0**	574.5	21.3
43000.0	181.4	-57.6			573.1	20.7
43500.0	177.0	-58.7			571.7	20.1
44000.0	172.7	-59.7			570.3	19.6
44500.0	168.5	-60.8			568.9	19.3
45000.0	164.4	-61.8			567.4	18.9
45500.0	160.4	-62.9			566.0	17.8
46000.0	156.5	-63.9			565.7	13.9
46500.0	152.7	-65.0			564.6	16.8
47000.0	149.0	-66.0			563.2	10.8
47500.0	145.3	-67.1			561.8	7.5
48000.0	141.8	-68.2			560.4	5.5
					558.9	4.1
					557.5	2.3
					557.5	13.0

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3650 M
28 AUG. 70 1900 HRS VDT
ASCENSION NO. 765

UPPER AIR DATA
2400020769
WHITE SANDS

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPONT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTN DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
48500.0	128.3	-69.0	556.4	235.9	556.4	0.1	13.1	1.000053
49000.0	124.6	-69.7	230.8	225.8	555.4	358.8	13.3	1.000051
49500.0	131.4	-70.4	554.4	220.8	553.5	1.8	13.9	1.000050
50000.0	128.1	-71.1	215.9	215.1	552.7	4.9	14.6	1.000049
50500.0	124.6	-71.7	211.1	551.8	551.8	11.3	14.7	1.000048
51000.0	121.7	-72.3	206.3	206.3	550.9	14.7	14.7	1.000047
51500.0	118.6	-73.0	201.7	550.1	550.1	28.3	14.4	1.000046
52000.0	115.5	-73.6	195.1	552.2	552.2	40.7	13.7	1.000045
52500.0	112.6	-72.0	188.3	188.3	554.8	53.4	13.0	1.000043
53000.0	109.8	-70.1	183.6	183.6	554.8	66.7	11.9	1.000042
53500.0	107.0	-70.2	179.1	554.7	554.7	80.0	10.8	1.000041
54000.0	104.3	-70.2	174.6	174.6	554.6	106.4	10.2	1.000040
54500.0	101.7	-70.3	170.3	554.5	554.5	119.5	9.4	1.000039
55000.0	99.1	-70.3	165.9	165.9	554.7	127.8	8.8	1.000038
55500.0	96.6	-70.2	160.6	160.6	556.6	136.1	8.1	1.000036
56000.0	94.2	-68.8	155.6	155.6	558.5	140.2	7.3	1.000035
56500.0	91.9	-67.4	150.7	150.7	560.4	140.6	6.3	1.000034
57000.0	89.6	-66.0	146.0	146.0	562.3	139.7	5.9	1.000033
57500.0	87.4	-64.6	142.2	142.2	562.8	135.3	6.6	1.000032
58000.0	85.2	-64.3	138.6	138.6	563.0	131.2	7.4	1.000031
58500.0	83.2	-64.1	135.1	135.1	563.3	131.0	7.1	1.000030
59000.0	81.1	-63.9	131.7	131.7	563.5	130.7	6.9	1.000029
59500.0	79.2	-63.7	128.4	128.4	563.8	128.7	7.4	1.000029
60000.0	77.2	-63.5	125.1	125.1	564.0	126.3	7.9	1.000028
60500.0	75.3	-63.3	122.0	122.0	564.2	122.8	8.4	1.000027
61000.0	73.5	-63.2	118.9	118.9	564.5	118.2	8.6	1.000026
61500.0	71.7	-63.0	115.9	115.9	564.7	113.6	8.9	1.000026
62000.0	70.0	-62.8	112.0	112.0	565.0	111.3	10.1	1.000025
62500.0	68.3	-62.6	109.9	109.9	566.0	109.0	11.3	1.000024

STATION ALTITUDE 15500
28 AUG. 70 1900 JRS MDT
ASCENSION NO. 765

UPPER AIR DATA
2400020769
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VII (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE		REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(UTN) KNOTS		REFRACTION INDEX OF REFRACTION
		DEGREES	CENTIGRADE				DIRECTION DEGREES	SPEED DEGREES	
63500.0	65.0	-61.0		106.8	567.2	108.2	12.0		1.000024
64000.0	63.5	-60.1		103.8	568.3	108.7	12.3		1.000023
64500.0	61.5	-59.3		100.9	569.5	109.2	12.5		1.000022
65000.0	60.5	-58.4		98.1	570.6	109.3	11.9		1.000022
65500.0	59.0	-57.5		95.3	571.8	109.3	11.2		1.000021
66000.0	57.6	-57.4		93.1	571.9	107.3	11.6		1.000021
66500.0	56.3	-57.3		90.8	572.0	104.2	12.5		1.000020
67000.0	54.9	-57.3		88.7	572.1	101.2	13.5		1.000020
67500.0	53.6	-57.2		86.5	572.2	98.8	14.6		1.000019
68000.0	52.4	-57.1		84.5	572.3	96.4	15.7		1.000019
68500.0	51.1	-57.0		82.4	572.5	97.1	17.5		1.000018
69000.0	49.9	-56.9		80.5	572.6	98.5	19.4		1.000018
69500.0	48.6	-56.8		78.5	572.7	99.2	20.7		1.000017
70000.0	47.6	-56.8		76.6	572.8	98.9	21.0		1.000017
70500.0	46.5	-56.7		74.8	572.9	98.6	21.4		1.000017
71000.0	45.4	-56.6		73.0	573.0	98.5	21.9		1.000016
71500.0	44.3	-56.5		71.3	573.1	98.6	22.5		1.000016
72000.0	43.3	-56.4		69.6	573.2	98.7	23.0		1.000015
72500.0	42.2	-56.3		67.9	573.3	97.1	23.1		1.000015
73000.0	41.1	-56.3		66.3	573.4	95.4	23.1		1.000015
73500.0	40.3	-56.2		64.7	573.5	93.1	23.1		1.000014
74000.0	39.3	-56.1		63.1	573.7	91.4	23.0		1.000014
74500.0	38.4	-56.0		61.6	573.8	89.6	23.0		1.000014
75000.0	37.5	-55.9		60.1	573.9	87.9	23.0		1.000013
75500.0	36.6	-55.9		58.7	574.0	85.9	23.2		1.000013
76000.0	35.7	-55.8		57.3	574.1	83.8	23.6		1.000013
76500.0	34.6	-55.6		55.9	574.3	81.7	23.9		1.000012
77000.0	34.1	-55.0		54.5	575.1	81.8	23.8		1.000012
77500.0	33.2	-54.4		53.1	575.8	82.7	23.4		1.000012
78000.0	32.5	-53.8		51.7	576.6	83.7	23.1		1.000012

STATION ALTITUDE
28 AUG. 70
ASCENSION NU.

UPPER AIR DATA
2400020765
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMP. CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA SPEED KNOTS	INDEX OF REFRACTION		
							DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	31.6	-53.3	50.3	577.4	84.9	22.5	1.000011	1.000011	1.000011
79000.0	31.6	-52.7	49.0	578.2	86.4	21.8	1.000011	1.000011	1.000011
79500.0	30.3	-52.1	47.8	579.0	87.9	21.1	1.000010	1.000010	1.000010
80000.0	29.6	-51.8	46.6	579.3	88.4	20.4	1.000010	1.000010	1.000010
80500.0	28.5	-51.7	45.5	579.4	88.4	19.8	1.000010	1.000010	1.000010
81000.0	28.3	-51.7	44.5	579.5	88.4	19.1	1.000010	1.000010	1.000010
81500.0	27.6	-51.6	43.4	579.5	85.8	18.6	1.000010	1.000010	1.000010
82000.0	27.0	-51.6	42.4	579.6	82.9	18.0	1.000009	1.000009	1.000009
82500.0	26.4	-51.5	41.4	579.6	80.8	17.8	1.000009	1.000009	1.000009
83000.0	25.7	-51.5	40.5	579.7	82.0	18.9	1.000009	1.000009	1.000009
83500.0	25.2	-51.5	39.5	579.8	83.1	20.0	1.000009	1.000009	1.000009
84000.0	24.6	-51.4	38.6	579.8	84.1	21.0	1.000009	1.000009	1.000009
84500.0	24.0	-51.4	37.7	579.9	85.0	22.0	1.000008	1.000008	1.000008
85000.0	23.5	-51.3	36.8	579.9	85.8	23.0	1.000008	1.000008	1.000008
85500.0	22.9	-51.3	36.0	580.0	84.3	24.0	1.000008	1.000008	1.000008
86000.0	22.4	-51.2	35.2	580.1	82.4	25.4	1.000008	1.000008	1.000008
86500.0	21.5	-51.2	34.3	580.1	80.7	26.7	1.000008	1.000008	1.000008
87000.0	21.4	-51.1	33.5	580.2	80.1	28.3	1.000007	1.000007	1.000007
87500.0	20.9	-51.2	32.8	580.3	79.4	29.8	1.000007	1.000007	1.000007
88000.0	20.4	-50.8	32.0	580.6	79.1	30.8	1.000007	1.000007	1.000007
88500.0	20.0	-50.5	31.2	581.0	79.2	31.3	1.000007	1.000007	1.000007
89000.0	19.5	-50.3	30.5	581.3	79.2	31.3	1.000007	1.000007	1.000007
89500.0	19.1	-50.1	29.8	581.6	80.7	33.1	1.000006	1.000006	1.000006
90000.0	18.6	-49.8	29.1	581.9	82.6	34.5	1.000006	1.000006	1.000006
90500.0	18.2	-49.6	28.4	582.2	84.5	35.9	1.000006	1.000006	1.000006
91000.0	17.8	-49.3	27.7	582.6	85.1	35.3	1.000006	1.000006	1.000006
91500.0	17.4	-49.1	27.1	582.9	85.7	34.7	1.000006	1.000006	1.000006
92000.0	17.0	-48.8	26.4	583.2	86.6	34.4	1.000006	1.000006	1.000006
92500.0	16.6	-48.6	25.8	583.5	88.4	34.6	1.000006	1.000006	1.000006
93000.0	16.3	-48.3	25.2	583.8	90.1	34.8	1.000006	1.000006	1.000006

XX WIND DATA MAY BE INVALID DUE TO MISSING RAN AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 2
28 AUG. 70 1900 HRS MDT
ASCENSION NO. 76

UPPER AIR DATA
2400020769
WHITE SANDS.

AIR TEMPERATURE
AIR DEWPOINT
DEGREES CENTIGRADE
GEOMETRIC ALTITUDE
FEET. MILLIBARS

GEOMETRIC ALTITUDE FEET.	PRESSURE MILLIBARS	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
					DIRECTION DEGREES(TN)	SPEED KNOTS	
93500.0	15.5	48.1	24.6	584.2	92.1	34.5XX	1.000005
94000.0	15.5	47.8	24.0	534.5	94.6	33.4XX	1.000005
94500.0	15.2	47.6	23.4	584.8	97.0	32.2XX	1.000005
95000.0	14.8	47.3	22.9	585.1	98.8	31.3XX	1.000005
95500.0	14.5	47.1	22.4	585.4	98.9	30.9XX	1.000005
96000.0	14.2	46.8	21.8	585.8	98.9	30.5XX	1.000005
96500.0	13.9	46.6	21.3	586.1	99.0	30.1XX	1.000005
97000.0	12.5	46.3	20.8	586.4	99.0	29.7XX	1.000005
97500.0	12.2	46.1	20.3	586.7	98.5	29.5XX	1.000005
98000.0	12.0	45.9	19.8	587.0	97.6	29.5XX	1.000004
98500.0	12.0	45.6	19.4	587.4	96.7	29.5XX	1.000004
99000.0	12.4	45.4	18.9	587.7	95.8	29.5XX	1.000004
99500.0	12.1	45.1	18.5	588.0	94.9	29.6XX	1.000004
100000.0	11.8	44.9	18.0	588.3	93.6	29.8XX	1.000004
100500.0	11.5	44.6	17.6	588.6	92.3	30.0XX	1.000004
101000.0	11.3	44.4	17.2	589.0	90.9	30.3XX	1.000004
101500.0	11.0	44.1	16.8	589.3	89.8	30.6	1.000004
102000.0	10.8	43.9	16.4	589.6	88.7	30.9	1.000004
102500.0	10.5	43.6	16.0	589.9	87.6	31.2	1.000004
103000.0	10.3	43.4	15.6	590.2	87.5	31.3	1.000003
103500.0	10.1	43.1	15.3	590.5	88.1	31.4	1.000003
104000.0	9.8	42.9	14.9	590.9	88.6	31.1	1.000003
104500.0	9.6	42.6	14.5	591.2	89.2	31.3	1.000003
105000.0	9.4	42.4	14.2	591.5	86.3	32.0	1.000003
105500.0	9.2	42.1	13.9	591.9	84.5	32.7	1.000003
106000.0	9.0	41.7	13.6	592.3	83.3	33.4	1.000003
106500.0	8.8	41.4	13.2	592.7	84.0	34.4	1.000003
107000.0	8.6	41.1	12.9	593.1	84.6	35.3	1.000003
107500.0	8.4	40.8	12.6	593.5	85.2	36.3	1.000003
108000.0	8.2	40.5	12.3	593.9	84.3	36.0	1.000003

TABLE VII (Cont.)

XX WIND DATA MAY BE INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE
28 AUG. 70.
ASCENSION NO.

UPPER AIR DATA
2400020709
WHITE SANDS
MIDNIGHT

TABLE VII. (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESENT MILLIBARS	WIND SPEED KNOTS	WIND DATA		INDEX OF REFRACTION
			REL.HUM. PERCENT	DENSITY GM/CUBIC METER	
108500.0	8.1	-40.2	12.1	594.3	35.8
109000.0	7.9	-39.6	11.8	594.7	35.5
109500.0	7.7	-39.6	11.5	595.1	1.000003
110000.0	7.5	-39.3	11.2	595.5	1.000002
110500.0	7.4	-38.9	11.0	595.9	1.000002
111000.0	7.2	-38.6	10.7	596.3	1.000002
111500.0	7.1	-38.3	10.5	596.7	1.000002
112000.0	6.9	-38.0	10.2	597.1	1.000002

STATION ALTITUDE
28 AUG. 70
ASCENSION NO. 1000 HRS MDT

MANDATORY LEVELS
2400020769
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE VIII.

PRESSURE VELPULNTIAL MILLIBARS	FEET	TEMPERATURE DEGREES CENTIGRADE			REL.HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)		
		AIR DEWPNT	CENTIGRADE					
85 C.C	4907.	29.3	1.6	17.	170.0	4.6XX		
800.0	6660.	24.4	-1.0	19.	151.0	5.7XX		
750.C	8494.	19.2	-4.0	20.	141.1	6.8XX		
700.0	10418.	13.7	-7.5	22.	110.2	8.0XX		
650.0	12443.	7.7	-11.4	24.	88.1	9.2XX		
600.0	14592.	4.8	-20.5	14.	65.5	10.4		
550.C.C	16902.	1.1	-23.5	14.	109.5	4.6		
500.0	19397.	-3.1	-26.7	14.	154.2	4.6		
450.0	22102.	-9.2	-30.1	17.	120.8	6.5		
400.0	25052.	-16.1	-34.4	19.	87.2	10.3		
350.0.C	28302.	-23.8	-39.6	22.	52.3	5.7		
300.0	31929.	-33.0	-44.7	30.	30.6	11.5		
250.0	36045.	-42.8	-53.2	32.**	31.8	14.4		
200.0	40874.	-53.1	-71.8	9.**	28.4	22.2		
175.0	43658.	-59.1			19.3	19.5		
150.0	46780.	-65.7			5.8	13.8		
125.0	50356.	-71.7			11.0	14.7		
100.0	54680.	-70.3			115.0	9.6		
80.0	59110.	-63.8			130.8	7.0		
70.0	61803.	-62.8			113.7	8.9		
60.0	64949.	-58.1			109.3	11.7		
50.0	68731.	-56.9			98.4	19.3		
40.0	73376.	-56.2			92.0	23.1		
30.0	79414.	-51.8			88.4	20.8		
25.0	83295.	-51.4			8.4	20.3		
20.0	88055.	-50.6			79.2	31.3		
15.0	94252.	-47.5			97.9	31.8XX		
10.0	103132.	-43.1			88.3	31.2		
7.0	111099.	-38.2						

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

XX WIND DATA MAY BE INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE
28 AUG. 7C
ASCENSION NO. 2200 HRS MDT

SIGNIFICANT LEVEL DATA
2400020770
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
165045.00 FEET N

TABLE IX

FLYING LEVEL	ALTIMETER MILLIBARS	ALTITUDE NSL FEET	TEMPERATURE DEGREES	AIR DEPOINT CENTIGRADE	REL.HUM. PERCENT
878.5	3989.0	21.4	4.5	33.0	
869.0	4302.0	28.5	8.8	29.0	
864.0	4470.2	28.5	6.0	24.0	
775.0	7592.9	20.7	-3.7	19.0	
623.0	13594.8	3.4	-9.6	38.0	
016.0	13897.2	5.5	-12.5	26.0	
008.0	14248.0	5.2	-19.4	15.0	
554.0	16727.2	1.9	-22.9	14.0	
429.0	23330.6	-12.1	-28.2	25.0	
317.0	30687.5	-29.6	-42.1	29.0	
294.0	32438.7	-34.5	-42.2	46.0	
288.0	32911.8	-36.0	-42.1	54.0	
275.0	33963.1	-38.3	-47.0	40.0	
255.0	35658.6	-42.4	-50.6	41.0	
209.0	39992.4	-52.2			
150.0	46845.3	-65.9			
114.0	52236.7	-73.5			
107.0	53464.2	-71.8			
101.0	54587.7	-71.5			
91.0	56636.4	-68.1			
85.0	57986.6	-68.6			
80.0	59196.4	-64.8			
76.0	60228.8	-65.1			
67.0	62790.9	-60.7			
59.0	65421.2	-57.8			
54.0	67260.8	-59.0			
42.0	72521.2	-54.6			
34.0	76979.1	-55.8			
27.0	81863.5	-52.9			
23.0	85274.9	-54.2			

STATION ALTITUDE 2600
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 7

SIGNIFICANT LEVEL DATA

2400020770
WHITE SANDS

WSTM SITE COORDINATES
48°58'00.00 FEET E
185045.00 FEET N

TABLE IX (Cont.)

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE FEET MSL	TEMPERATURE DEGREES AIR DEWPONT CENTIGRADE	REL. HUM. PERCENT
16.0	93118.0	-46.1	
11.5	100425.5	-43.9	
9.8	104023.5	-38.9	
6.3	114044.1	-40.2	
4.7	120759.4	-34.4	
4.4	122290.0	-34.6	

STATUE ALTITUDE
28 AUG. 70
ASCENS LUN. 0000

WSTM SITE COORDINATES
486580.00 FEET E
185045.00 FEET N

TABLE X

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPPOINT CENTIGRADE	REL.HUM. PERCENT		SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	INDEX OF REFRACTION
				GM/CUBIC METER	SOUND METER			
3989.0	876.5	21.4	4.5	33.0	1035.4	669.5	150.0	1.000267
4000.0	878.2	21.6	4.7	32.9	1034.1	669.8	150.1	4.1
4500.0	863.1	28.4	5.9	24.0	993.1	677.6	153.5	1.000260
5000.0	848.2	27.2	4.4	23.2	980.4	676.0	156.9	1.000254
5500.0	833.6	25.9	2.8	22.4	967.8	674.5	160.4	1.000247
6000.0	819.2	24.7	1.3	21.6	955.4	673.0	163.8	1.000241
6500.0	805.1	23.4	-0.3	20.7	943.1	671.5	162.1	1.000236
7000.0	791.2	22.2	-1.9	19.9	931.0	670.0	159.3	1.000231
7500.0	777.5	20.9	-3.5	19.1	919.0	668.5	160.3	1.000226
8000.0	763.6	19.5	-3.8	20.3	907.0	666.9	160.2	1.000222
8500.0	749.8	18.1	-4.0	21.9	895.0	665.3	158.9	1.000220
9000.0	736.3	16.6	-4.3	23.5	883.3	663.6	154.1	1.000217
9500.0	723.1	15.2	-4.7	25.0	871.7	661.9	146.0	1.000214
10000.0	710.0	13.8	-5.1	26.6	860.3	660.3	131.7	1.000211
10500.0	697.2	12.3	-5.6	28.2	849.1	658.6	120.2	1.000208
11000.0	684.7	10.9	-6.1	29.8	838.1	656.9	109.9	8.6
11500.0	672.3	9.4	-6.7	31.4	827.2	655.2	99.8	1.000205
12000.0	660.2	8.0	-7.3	33.0	816.5	653.5	91.3	1.000199
12500.0	648.3	6.6	-8.0	34.5	806.0	651.8	84.2	1.000196
13000.0	636.6	5.1	-8.7	36.1	795.6	650.1	75.8	1.000193
13500.0	625.2	3.7	-9.5	37.7	785.4	648.4	70.9	1.000190
14000.0	613.6	5.4	-14.2	22.8	766.6	650.3	70.0	1.000181
14500.0	602.3	4.9	-19.7	14.9	754.2	649.5	76.1	1.000174
15000.0	591.1	4.2	-20.4	14.7	742.0	648.7	83.2	1.000171
15500.0	580.1	3.5	-21.1	14.5	730.0	647.9	90.8	1.000168
16000.0	569.3	2.9	-21.8	14.3	718.1	647.1	94.1	1.000165
16500.0	558.7	2.2	-22.5	14.1	706.5	646.3	95.3	1.000162
17000.0	548.2	1.3	-23.0	14.5	695.4	645.3	93.0	1.000160
17500.0	537.7	0.3	-23.2	15.3	684.7	644.1	91.4	1.000157
18000.0	527.4	-0.8	-23.5	16.1	674.2	642.8	91.8	1.000155

STATION ALTITUDE 29° 40' 00"
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 77

UPPER AIR DATA
2400020770
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE X (Cont.)

GEOMETRIC ALTITUDE NSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	INDEX OF REFRACTION	INDEX OF REFRACTION
18500.0	517.2	-1.9	-23.8	17.0	663.9	641.6	88.1	5.4
19000.0	507.3	-2.9	-24.1	17.8	653.7	640.3	82.0	4.3
19500.0	497.6	-4.0	-24.5	18.6	643.7	639.0	78.7	3.9
20000.0	488.1	-5.0	-24.9	19.5	633.8	637.8	85.5	3.6
20500.0	478.7	-6.1	-25.3	20.3	624.2	636.5	103.2	3.4
21000.0	469.5	-7.2	-25.8	21.1	614.6	635.2	122.6	3.8
21500.0	460.5	-8.2	-26.3	22.0	605.3	634.0	135.4	4.5
22000.0	451.7	-9.3	-25.8	22.8	596.1	632.7	137.4	5.6
22500.0	443.0	-10.3	-27.3	23.6	587.0	631.4	127.2	5.9
23000.0	434.5	-11.4	-27.8	24.4	578.1	630.1	113.6	6.1
23500.0	426.0	-12.5	-28.5	25.1	569.2	628.8	101.6	7.5
24000.0	417.4	-13.7	-29.4	25.4	560.2	627.4	95.0	8.1
24500.0	408.5	-14.9	-30.4	25.6	551.3	625.9	92.7	8.2
25000.0	400.5	-16.1	-31.3	25.9	542.6	624.4	90.1	7.7
25500.0	392.4	-17.3	-32.2	26.2	534.1	623.0	85.7	6.9
26000.0	384.4	-18.4	-33.2	26.5	525.6	621.5	79.5	5.8
26500.0	376.0	-19.6	-34.1	26.7	517.4	620.1	70.0	5.9
27000.0	368.5	-20.8	-35.0	27.0	509.2	618.6	62.3	6.3
27500.0	361.4	-22.0	-36.0	27.3	501.3	617.1	59.9	7.2
28000.0	354.0	-23.2	-36.9	27.5	493.4	615.7	58.4	7.7
28500.0	346.5	-24.4	-37.9	27.8	485.7	614.2	57.5	7.8
29000.0	339.8	-25.6	-38.8	28.1	478.1	612.7	45.6	7.8
29500.0	332.9	-26.8	-39.8	28.4	470.6	611.2	33.8	7.9
30000.0	326.1	-28.0	-40.8	28.6	463.3	609.8	20.9	8.4
30500.0	319.2	-29.2	-41.7	28.9	456.1	608.3	22.5	9.3
31000.0	312.8	-30.5	-41.9	32.0	449.0	606.6	20.8	10.4
31500.0	306.1	-31.9	-41.9	36.9	442.0	604.9	24.5	11.7
32000.0	299.6	-33.3	-42.0	41.7	435.1	603.1	29.0	12.9
32500.0	292.2	-34.7	-42.2	47.0	428.3	601.3	30.6	14.0
33000.0	286.5	-36.2	-42.5	52.8	421.7	599.4	32.1	15.0

STATION ALTITUDE
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 1

JPPER AIR DATA
2400020770
WHITE SANDS

TABLE X (Cont.)

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	WIND DATA		INDEX OF REFRACTION
					DIRECTION DEGREES(TN)	SPEED KNOTS	
33500.0	280.7	-37.3	46.2	414.5	598.0	33.2	1.000093
34000.0	274.5	-38.4	47.1	407.4	596.6	34.4	1.000091
34500.0	268.5	-39.6	48.2	400.5	595.1	36.1	1.000090
35000.0	262.6	-40.8	49.2	393.7	593.6	37.4	1.000088
35500.0	256.6	-42.0	50.3	387.1	592.0	37.8	1.000087
36000.0	251.6	-43.2	52.0	380.3	590.5	38.3	1.000085
36500.0	245.3	-44.3	54.1	373.5	589.1	38.9	1.000083
37000.0	239.6	-45.4	56.4	366.8	587.6	37.1	1.000082
37500.0	234.3	-46.6	58.9	360.3	586.1	34.4	1.000080
38000.0	229.0	-47.7	61.6	353.9	584.7	31.7	1.000079
38500.0	223.6	-48.8	64.7	347.6	583.2	29.6	1.000077
39000.0	218.7	-50.0	68.6	341.5	581.7	29.3	1.000076
39500.0	213.6	-51.1	74.2	335.4	580.2	29.8	1.000075
40000.0	208.5	-52.2	74.2	329.5	578.8	31.3	1.000073
40500.0	203.5	-53.2	73.1	323.1	577.5	32.5	1.000072
41000.0	198.1	-54.2	75.2	316.8	576.1	33.5	1.000071
41500.0	194.3	-55.2	75.2	310.6	574.8	33.5	1.000069
42000.0	189.6	-56.2	76.2	304.6	573.5	33.4	1.000068
42500.0	185.1	-57.2	76.2	298.7	572.2	33.5	1.000067
43000.0	180.7	-58.2	76.2	292.9	570.9	33.5	1.000065
43500.0	176.4	-59.2	76.2	287.2	569.5	33.3	1.000064
44000.0	172.1	-60.2	76.2	281.7	568.2	32.4	1.000063
44500.0	168.0	-61.2	76.2	276.2	566.9	30.2	1.000062
45000.0	164.6	-62.2	76.2	270.9	565.5	27.2	1.000060
45500.0	160.1	-63.2	76.2	265.7	564.2	22.6	1.000059
46000.0	156.3	-64.2	76.2	260.6	562.8	17.9	1.000058
46500.0	152.5	-65.2	75.6	255.6	561.5	13.0	1.000057
47000.0	148.6	-66.1	75.5	250.5	560.3	9.2	1.000056
47500.0	145.1	-66.8	75.0	245.0	559.3	7.9	1.000055
48000.0	141.4	-67.5	75.7	239.7	558.4	9.4	1.000053

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 7

UPPER AIR DATA
2400020770
WHITE SANDS

WSIM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE X (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DENSITY CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	REFRACTION INDEX OF
48500.0	137.9	-68.2		234.4	557.4	15.4	15.5	1.000052	
49000.0	134.4	-68.9		229.3	556.4	21.6	14.7	1.000051	
49500.0	131.0	-69.6		224.3	555.5	28.1	13.8	1.000050	
50000.0	127.7	-70.3		219.5	554.5	34.6	12.9	1.000049	
50500.0	124.5	-71.1		214.7	553.5	41.4	12.0	1.000048	
51000.0	121.4	-71.8		210.0	552.6	48.2	11.2	1.000047	
51500.0	118.4	-72.5		205.5	551.6	62.3	10.4	1.000046	
52000.0	115.4	-73.2		201.0	550.6	78.3	9.6	1.000045	
52500.0	112.5	-73.1		195.9	550.7	92.8	9.4	1.000044	
53000.0	109.6	-72.4		190.2	551.6	106.0	9.6	1.000042	
53500.0	106.6	-71.8		184.8	552.5	118.5	10.1	1.000041	
54000.0	104.1	-71.7		180.0	552.7	129.3	11.3	1.000040	
54500.0	101.5	-71.5		175.3	552.9	140.0	12.5	1.000039	
55000.0	98.9	-70.8		170.3	553.9	148.3	10.8	1.000038	
55500.0	96.4	-70.0		165.4	555.0	156.6	9.2	1.000037	
56000.0	94.0	-69.2		160.5	556.1	163.7	8.0	1.000036	
56500.0	91.6	-68.3		155.9	557.3	170.1	7.1	1.000035	
57000.0	89.3	-68.2		151.9	557.4	171.6	6.2	1.000034	
57500.0	87.1	-68.4		148.3	557.1	155.2	4.9	1.000033	
58000.0	84.9	-68.6		144.7	557.0	138.8	3.7	1.000032	
58500.0	82.6	-67.0		140.0	559.1	125.8	3.8	1.000031	
59000.0	80.4	-65.4		135.5	561.2	114.1	4.4	1.000030	
59500.0	78.0	-64.9		131.8	561.9	104.1	5.2	1.000029	
60000.0	76.9	-65.0		128.7	561.7	102.4	6.8	1.000029	
60500.0	75.0	-64.6		125.3	562.3	100.7	8.3	1.000028	
61000.0	73.2	-63.8		121.8	563.4	103.0	9.3	1.000027	
61500.0	71.4	-62.9		118.3	564.6	108.3	9.9	1.000026	
62000.0	69.7	-62.1		115.0	565.7	113.6	10.5	1.000026	
62500.0	68.0	-61.2		111.7	566.9	113.8	10.8	1.000025	
63000.0	66.3	-60.5		108.7	567.9	114.0	11.2	1.000024	

18 AUGUST 1950
ASCENDANCE
2200 HRS MDT

TABLE X (Cont.)

111. INSTRUMENTS
48 GROUND LEVEL
185045.0, 621

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	HUMIDITY PERCENT	SOUND METER	SPEED OF WIND DATA DIRECTIN DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
63500.0	64.7	-59.9	105.8	568.6	113.7	11.5	1.0000024
64000.0	62.4	-59.4	103.0	569.3	112.9	11.7	1.0000023
64500.0	61.7	-58.8	100.3	570.1	112.0	12.0	1.0000022
65000.0	60.2	-58.3	97.6	570.8	105.5	11.8	1.0000022
65500.0	58.8	-57.9	95.1	571.3	98.9	11.7	1.0000021
66000.0	57.4	-58.2	93.0	570.9	93.6	12.2	1.0000021
66500.0	56.0	-58.5	90.9	570.5	90.2	13.7	1.0000020
67000.0	54.7	-58.8	88.9	570.0	86.7	15.3	1.0000020
67500.0	53.4	-58.8	86.8	570.1	84.2	16.7	1.0000019
68000.0	52.1	-58.4	84.6	570.6	83.0	17.8	1.0000019
68500.0	50.9	-58.0	82.4	571.2	81.8	19.0	1.0000018
69000.0	49.7	-57.5	80.3	571.7	81.0	20.0	1.0000018
69500.0	48.5	-57.1	78.3	572.3	82.7	20.6	1.0000017
70000.0	47.4	-56.7	76.3	572.9	84.3	21.1	1.0000017
70500.0	46.3	-56.3	74.3	573.4	86.0	21.7	1.0000017
71000.0	45.2	-55.9	72.4	574.0	88.0	21.8	1.0000016
71500.0	44.1	-55.5	70.6	574.5	90.0	21.9	1.0000016
72000.0	43.1	-55.0	68.8	575.1	92.1	22.0	1.0000015
72500.0	42.0	-54.6	67.0	575.6	94.4	21.8	1.0000015
73000.0	41.1	-54.7	65.5	575.5	96.9	21.5	1.0000015
73500.0	40.1	-54.9	64.0	575.3	99.3	21.2	1.0000014
74000.0	39.2	-55.0	62.5	575.1	100.7	20.9	1.0000014
74500.0	38.2	-55.1	61.1	574.9	102.1	20.7	1.0000014
75000.0	37.3	-55.3	59.7	574.8	102.2	20.0	1.0000013
75500.0	36.5	-55.4	58.4	574.6	101.8	19.1	1.0000013
76000.0	35.6	-55.5	57.0	574.4	101.6	18.9	1.0000013
76500.0	34.8	-55.7	55.7	574.2	101.7	19.6	1.0000012
77000.0	34.0	-55.8	54.4	574.1	101.8	20.3	1.0000012
77500.0	33.2	-55.5	53.1	574.5	101.2	20.8	1.0000012
78000.0	32.4	-55.2	51.8	574.9	100.6	21.3	1.0000012

STATION ALTITUDE 3584.
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 111

UPPER AIR DATA
2400020770
WHITE SANDS

TABLE X (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE		AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF WIND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
		31.6	-54.9							
78500.0	31.6	-54.9				50.5	575.2	100.4	21.6	1.000011
79000.0	30.5	-54.6				49.3	575.6	99.7	21.9	1.000011
79500.0	30.2	-54.3				48.1	576.0	98.9	22.1	1.000011
80000.0	29.5	-54.0				46.9	576.4	94.6	21.3	1.000010
80500.0	28.8	-53.7				45.7	576.8	90.4	20.4	1.000010
81000.0	28.1	-53.4				44.6	577.2	87.0	20.4	1.000010
81500.0	27.5	-53.1				43.5	577.6	84.5	21.2	1.000010
82000.0	26.8	-53.0				42.4	577.8	82.1	22.0	1.000009
82500.0	26.2	-53.1				41.5	577.6	80.8	23.1	1.000009
83000.0	25.6	-53.3				40.6	577.3	79.9	24.2	1.000009
83500.0	25.0	-53.5				39.7	577.1	79.2	25.5	1.000009
84000.0	24.4	-53.7				38.8	576.8	79.9	27.4	1.000009
84500.0	23.9	-53.9				37.9	576.6	80.6	29.4	1.000008
85000.0	23.3	-54.1				37.1	576.3	80.9	30.9	1.000008
85500.0	22.8	-54.0				36.2	576.5	80.8	32.0	1.000008
86000.0	22.2	-53.5				35.3	577.1	80.8	33.1	1.000008
86500.0	21.7	-52.9				34.4	577.8	80.7	34.5	1.000008
87000.0	21.2	-52.4				33.5	578.5	80.6	35.8	1.000007
87500.0	20.7	-51.9				32.7	579.2	80.7	37.0	1.000007
88000.0	20.3	-51.4				31.9	579.9	81.8	37.2	1.000007
88500.0	19.8	-50.9				31.1	580.5	82.9	37.5	1.000007
89000.0	19.4	-50.4				30.3	581.2	84.1	37.8	1.000007
89500.0	18.9	-49.8				29.5	581.9	85.8	38.2	1.000007
90000.0	18.5	-49.3				28.8	582.5	87.4	38.7	1.000006
90500.0	18.1	-48.8				28.0	583.2	88.8	38.7	1.000006
91000.0	17.6	-48.3				27.3	583.9	89.7	38.0	1.000006
91500.0	17.2	-47.8				26.7	584.6	90.7	37.3	1.000006
92000.0	16.8	-47.3				26.0	585.2	91.7	37.0	1.000006
92500.0	16.5	-46.7				25.3	585.9	92.8	37.0	1.000006
93000.0	16.1	-46.2				24.7	586.6	93.9	37.0	1.000005

STATION ALTITUDE 2200 HRS NDT
26 AUG. 70
ASCENSION NC.

UPPER AIR DATA
2400020770
WHITE SANDS

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE X (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	KELVIN PERCENT	HUMIDITY CENTIGRADE	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (T)	WIND SPEED KNOTS	INDEX OF REFRACTION
93500.0	15.7	-46.0	93500.0	94.6	586.9	94.6	36.4	1.000005	
94000.0	15.4	-45.8	23.6	587.1	95.1	35.4	1.000005		
94500.0	15.0	-45.7	23.0	587.3	95.5	34.3	1.000005		
95000.0	14.7	-45.5	22.5	587.5	96.3	33.9	1.000005		
95500.0	14.4	-45.4	22.0	587.6	97.4	33.9	1.000005		
96000.0	14.0	-45.2	21.5	587.8	98.5	33.9	1.000005		
96500.0	13.7	-45.1	21.0	588.0	98.6	33.6	1.000005		
97000.0	13.4	-44.9	20.5	588.2	97.8	33.0	1.000005		
97500.0	13.1	-44.8	20.0	588.4	97.1	32.4	1.000004		
98000.0	12.8	-44.6	19.6	588.6	95.9	32.3	1.000004		
98500.0	12.5	-44.5	19.1	588.8	94.4	32.7	1.000004		
99000.0	12.2	-44.3	18.7	589.0	92.9	33.0	1.000004		
99500.0	12.0	-44.2	18.2	589.2	91.5	33.0	1.000004		
100000.0	11.7	-44.0	17.8	589.4	90.3	32.8	1.000004		
100500.0	11.5	-43.8	17.4	589.7	89.0	32.5	1.000004		
101000.0	11.2	-43.6	17.0	590.6	87.9	32.1	1.000004		
101500.0	11.0	-43.4	16.6	591.5	87.0	31.5	1.000004		
102000.0	10.7	-43.1	16.1	592.4	86.1	30.9	1.000004		
102500.0	10.5	-43.0	15.7	593.3	86.3	31.5	1.000004		
103000.0	10.3	-42.4	15.3	594.1	87.4	33.0	1.000003		
103500.0	10.0	-42.0	15.0	595.0	88.4	34.4	1.000003		
104000.0	9.8	-41.0	14.6	595.9	89.5	35.7	1.000003		
104500.0	9.6	-40.3	14.3	595.9	90.6	36.9	1.000003		
105000.0	9.4	-39.6	14.0	595.8	91.8	38.0	1.000003		
105500.0	9.2	-38.9	13.7	595.7	92.9	39.1	1.000003		
106000.0	9.0	-39.1	13.4	595.6	93.9	40.1	1.000003		
106500.0	8.8	-39.2	13.1	595.5	94.9	41.1	1.000003		
107000.0	8.6	-39.3	12.8	595.5	95.9	42.1	1.000003		
107500.0	8.4	-39.4	12.5	595.4	96.4	42.5	1.000003		
108000.0	8.2	-39.4	12.3	595.3	95.5	40.8	1.000003		

STATION ALTITUDE 3495.00 FT MSL
28 AUG. 70 2200 HRS MDT
ASCENSION NO. 11

UPPER AIR DATA
2400020770
WHITE SANDS

TABLE X (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
		DEGREES	CENTIGRADE						
108500.0	8.0	-39.5			12.0	595.2	94.5	39.0	1.000003
109000.0	7.9	-39.5			11.7	595.1	93.5	37.3	1.000003
109500.0	7.7	-39.6			11.5	595.0	92.4	36.0	1.000003
110000.0	7.5	-39.7			11.2	595.0	91.1	35.1	1.000002
110500.0	7.4	-39.7			11.0	594.9	90.7	34.3	1.000002
111000.0	7.2	-39.8			10.8	594.8	88.4	33.4	1.000002
111500.0	7.0	-39.9			10.5	594.7	88.2	32.9	1.000002
112000.0	6.9	-39.9			10.3	594.6	88.5	32.4	1.000002
112500.0	6.7	-40.0			10.1	594.6	88.8	32.0	1.000002
113000.0	6.6	-40.1			9.9	594.5	89.0	31.5	1.000002
113500.0	6.5	-40.1			9.6	594.4	91.1	32.8	1.000002
114000.0	6.3	-40.2			9.4	594.3	93.1	34.0	1.000002
114500.0	6.2	-39.8			9.2	594.8	95.1	35.3	1.000002
115000.0	6.0	-39.4			9.0	595.3	97.0	36.6	1.000002
115500.0	5.9	-38.9			8.8	595.9	98.7	37.9	1.000002
116000.0	5.8	-38.5			8.6	596.4	100.4	39.2	1.000002
116500.0	5.7	-38.1			8.4	597.0	102.1	40.5	1.000002
117000.0	5.5	-37.6			8.2	597.5	102.6	41.0	1.000002
117500.0	5.4	-37.2			8.0	598.1	101.3	40.3	1.000002
118000.0	5.3	-36.8			7.8	598.6	100.0	39.7	1.000002
118500.0	5.2	-36.4			7.6	599.2	98.8	39.1	1.000002
119000.0	5.1	-35.9			7.5	599.7			1.000002
119500.0	5.0	-35.5			7.3	600.3			1.000002
120000.0	4.9	-35.1			7.1	600.8			1.000002
120500.0	4.8	-34.6			6.9	601.4			1.000002
121000.0	4.7	-34.4			6.8	601.6			1.000002
121500.0	4.6	-34.5			6.6	601.5			1.000001
122000.0	4.5	-34.6			6.5	601.4			1.000001

STATION ALTITUDE
24,000 FEET
ASCENSION NO.
4815800 COORDINATES
183045.00 FEET E

AIRPORT LEVEL
24,000 FEET
WIND DIRECTION

TABLE XI

MILLIBARS FEET	ATMOSPHERIC POTENTIAL CENTIGRADE	AIR TEMPERATURE CENTIGRADE	PERCENT DECREASING	RELATIVE HUMIDITY	WIND DIRECTION DEGREES (TR)	WIND SPEED KNOTS
850.0	4944.	27.3	4.6	23.	156.6	6.5
800.0	6687.	23.0	-0.9	20.	160.9	10.1
750.0	8513.	18.1	-4.0	22.	158.8	9.5
700.0	10431.	12.6	-5.5	28.	121.5	7.6
650.0	12449.	6.8	-7.9	44.	84.8	12.6
600.0	14592.	4.7	-19.9	15.	77.5	8.8
550.0	16904.	1.5	-22.9	14.	53.3	8.5
500.0	19397.	-3.7	-24.4	18.	73.3	4.0
450.0	22098.	-9.5	-26.9	23.	137.6	5.8
400.0	25046.	-16.1	-31.3	26.	89.7	7.6
350.0	28296.	-23.9	-37.5	28.	57.8	7.7
300.0	31922.	-33.2	-42.0	41.**	28.9	12.9
250.0	36034.	-43.4	-52.4	37.**	33.4	18.5
200.0	40844.	-54.0				25.9
175.0	43621.	-59.5				21.0
150.0	46738.	-65.9				17.5
125.0	50325.	-70.9				12.1
100.0	54635.	-74.2				11.6
80.0	59025.	-64.8				4.7
70.0	61707.	-62.2				10.4
60.0	64864.	-58.2				11.8
50.0	68628.	-57.7				19.8
40.0	73288.	-54.9				21.2
30.0	79314.	-54.2				21.9
25.0	83163.	-53.5				25.4
20.0	87882.	-51.1				37.4
15.0	94107.	-45.7				34.2
10.0	103047.	-39.5				34.6
7.0	11059.	-39.9				32.7
5.0	118644.	-35.6				38.3

**, AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RAWIN- SONDE	RELEASE TIME (MDT)	SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND						THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		TOWER 9-216 FT	PIBAL 216-4270 FT	RAWIN 4270-53200 FT		TOTAL				
	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	RANGE	N-S	E-W
1900	2000	4.5S	0.9E	7.8S	4.0E	3.4N	1.8E	8.9S	6.8E	004.3
1900	2030	2.8S	0.3E	8.9S	4.5E	3.4N	1.8E	8.3S	6.6E	004.1
1900	2100	1.9S	1.7W	8.2S	1.0W	3.4N	1.8E	6.7S	0.9W	359.2
1900	2110	3.1S	0.7W	8.4S	0.5W	3.4N	1.8E	8.1S	0.6E	359.0
1900	2120	3.6S	0.5E	7.8S	0.5W	3.4N	1.8E	8.0S	1.8E	360.0
1900	2130	1.7S	0.5W	7.3S	0.8W	3.4N	1.8E	5.6S	1.5E	359.8
1900	2140	2.2S	0.9W	6.7S	2.3W	3.4N	1.8E	5.5S	1.4W	358.4
1900	2150	1.4S	0.6W	5.5S	1.8W	3.4N	1.8E	3.5S	0.6W	358.1
1900	2200	2.0S	0.0	5.2S	0.4W	3.4N	1.8E	3.8S	1.4E	358.4
2200	2200	2.0S	0.0	5.2S	0.4W	3.7N	2.6E	3.5S	2.2E	000.3

TABLE XII. IMPACT PREDICTION DATA
NIKE-HYDAC STV 96

	AZIMUTH (DEGREES)	MILES FROM LAUNCHER N-S	MILES FROM LAUNCHER E-W
LAUNCHER SETTING (ELEVATION 82.7 DEGREES QE)	001.0	75.5	75.5
NO WIND IMPACT	358.6	75.5	75.5N 1.8W
PREDICTED SECOND-STAGE IMPACT	357.0	70.1	70.0N 3.7W
SECOND-STAGE IMPACT, RADAR TRACK	354.1	70.1	69.7N 7.2W
PREDICTED BOOSTER IMPACT	358.0	1.4	1.4N 0.1W
ACTUAL BOOSTER IMPACT	354.2	1.6	0.2W 1.6N

TABLE XII. IMPACT PREDICTION DATA (CONT)
NIKE-HYDAC STV 96

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13. ABSTRACT		

Meteorological data gathered for the launching of Nike-Hydac STV 96 are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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